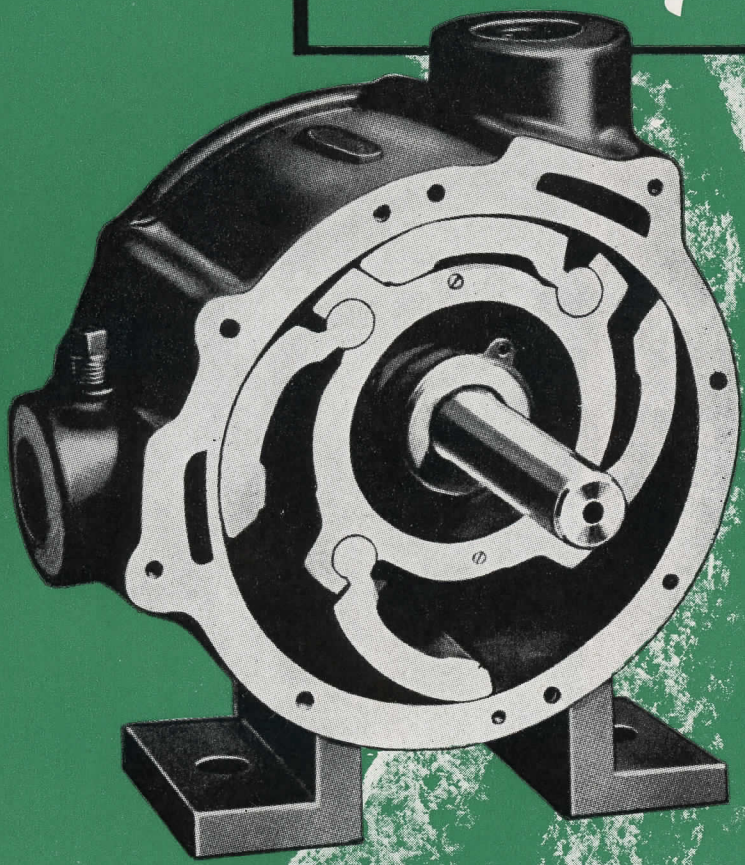
LEIMAN

air and vacuum pumps



VACUUM AND PRESSURE

rotary-positive

•

air motors
gas pumps

Catalog No. 752

LEIMAN BROS., INC.

164 Christie Street, Newark 5, N. J.

Leiman air pumps are

designed for producing a smooth, continuous flow of air to be used for suction (vacuum) or pressure. This suction or air pressure may be used for lifting or holding objects, or for blowing or transferring materials, including liquids and gases.

how used

where light materials such as paper, cardboard, thin metal, plastics, etc., in the form of sheets or small parts must be lifted or held in place temporarily, air suction applied to the object usually does the job better and more economically than a mechanical device. Where vacuums must be created, as in some filling or mixing operations, an air pump is the obvious solution. Where materials must be blown, liquids agitated, or gas pressures increased, an air pump will provide the needed pressure.

where

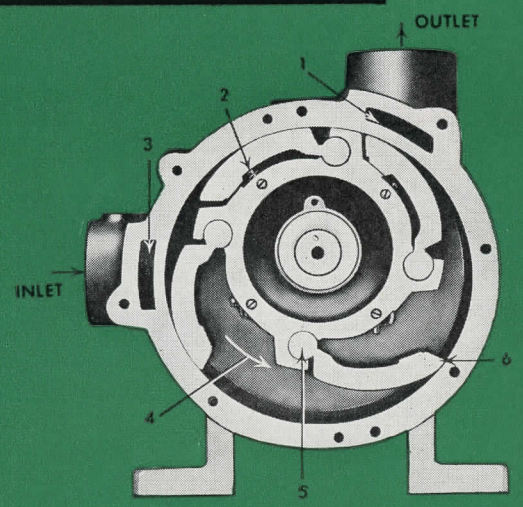
Since 1889, Leiman Rotary Positive Air Pumps have been used by the leading firms in many industries and for many different uses. Other applications will suggest themselves to the design engineer and to the plant manager faced with finding a better way of handling a specific job. Air in the form of vacuum or pressure or both may be the most satisfactory and economical solution to the problem.

rotary positive

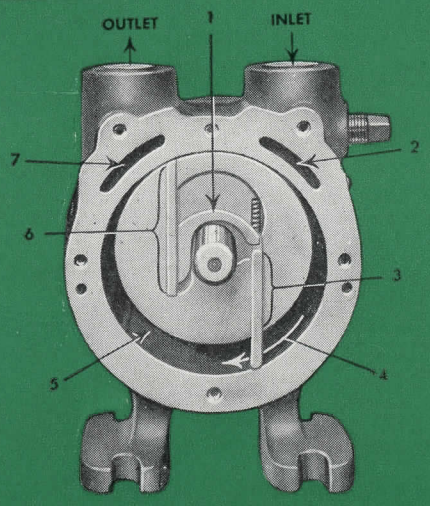
The Leiman rotary positive type is to be preferred for work within its capacity as to volume, pressure or vacuum, because of the even and continuous flow of air or gas may be taken directly from these rotary pumps without the use of a storage tank.

The advantages of the Leiman rotary type over reciprocating pumps are that they deliver a continuous flow of air practically free from pulsations, avoid reciprocating complications, are simpler in construction, are much smaller in dimensions for a given capacity, occupy less space, and cost less to install and maintain. They are designed for applications where mercury vacuums are required up to 29 inches and pressures up to 25 pounds per square inch.

4-wing type



2-wing type



1. Air from cylinder through by-pass in cylinder head enters this slot on its way to the outlet above. No opening in curved inner surface means quiet operation.
2. Enclosed stud in piston holds wing close to cylinder at top on largest pumps.
3. Air coming in at inlet at side comes through this slot into cylinder head by-pass and then into the cylinder. No opening in curved inner surface of cylinder means quiet operation.
4. Direction of rotation showing how extended wing scoops up the air at the inlet and carries it around to the outlet.
5. The easy-action hinge enables wing to open and close by the action of centrifugal force.
6. Wing and cylinder surfaces become hard and glassy-like, insuring a perfect fit and positive pressure or vacuum. There are no composition tips to require frequent renewal.

   Inlet and outlet threaded for standard iron pipe. Can be used as either vacuum or pressure pumps.

1. The Patented Automatic Wing Adjuster.
2. Air coming in at inlet at top passes through this slot into piston head by-pass and then into cylinder. No opening in curved inner surface of cylinder means quiet operation.
3. The large proportion of wing which always remains in piston slot gives firm bearing and eliminates chattering and fluctation of air delivery or vacuum.
4. Direction of rotation combined with firm, extra long wing bearing in piston slot and offset of wings from shaft center means easy, noiseless operation.
5. Large proportional air space makes it possible to use a small, compact machine.
6. Wing offset from shaft has extra long slot in piston for rigid bearing.
7. Air from cylinder through by-pass in cylinder head enters this slot on its way to the outlet above. No opening in inner curved cylinder wall means quiet operation.

   Outlet and inlet threaded for standard iron pipe.

bearings

stuffing box

When Leiman Air Pumps are used for pumping or boosting gas or where the highest degree of vacuum or pressure is required, we furnish this type of bearing. It has an adjustable nut and packing gland on the shaft of the pulley side and the opposite side of the pump has a closed up or blind bearing.

ring oil

The shaft bearings are furnished with a double ring oiling device in the large size pumps for the lower degrees of air pressure or vacuum. The oil well is filled with machine oil and as the shaft revolves, the rings dip into the oil and carry it up on the shaft This insures a well lubricated bearing and trouble-free operation.

wool yarn

Most Leiman Air Pumps, except those built for the highest degree of vacuum or pressure, are fitted with our latest type wool yarn packed bearing. These bearings will provide ample lubrication for many months of continuous service. The wool also filters the oil and prevents any foreign matter from reaching the polished bearing and shaft surfaces.

roller or ball

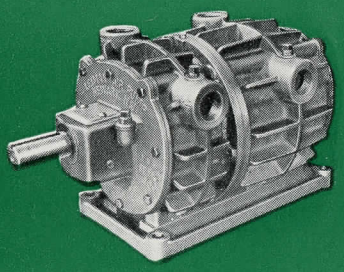
These bearings are available in certain pump sizes and are standard equipment on all Leiman Air Motors.

water cooled

Air subjected to pressure or the presence of a high degree of vacuum will heat up a pump. The hinged wings of the 4-wing type are not affected by the metal expansion, because they open and close on the hinges with very little action. As an extra precaution against heat, certain pump sizes are built with air cooling fins. Other sizes which operate under the most extreme conditions are equipped with water cooling jackets.

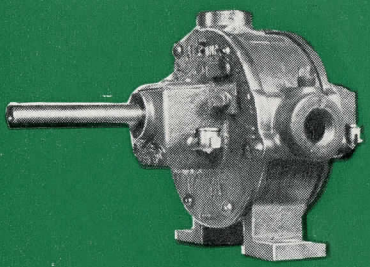
4-wing type

4-wing type double cylinder



Can be used where both blowing and suction are needed simultaneously.

wing type single cylinder



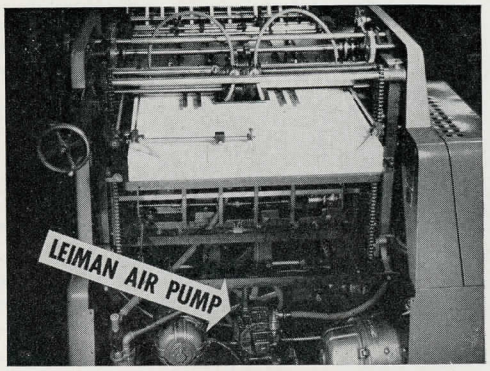
Can be used where either suction or blowing is needed.

perfect vacuum or compression

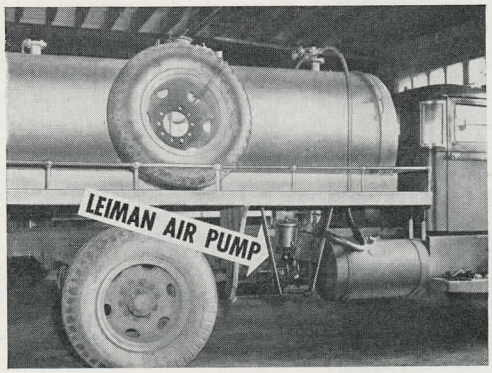
The interior construction of this 4-wing type is so arranged that the wings take up their own wear They wear uniformly, regardless of age, and maintain perfect contact with the inner cylinder wall.

The wings are hinged to the piston and centrifugal force insures their close, continual contact with the curved inner wall of the cylinder

Every part of a Leiman Air Pump is machined to close tolerances and accurately fitted in the final assembly. As a result, no gaskets or other packing are ever required.



A Leiman Air Pump furnishes the air required in the feeding operation of the new Kelly Three printing press.



A Leiman Air Pump mounted on a chemical tank truck supplies the air pressure needed to force the liquids from the tank.

specifications

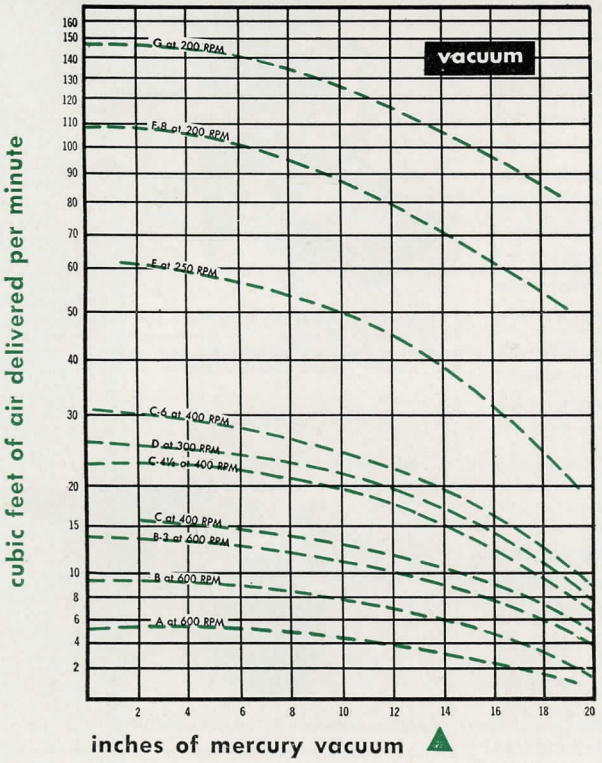
curved 4-wing pumps

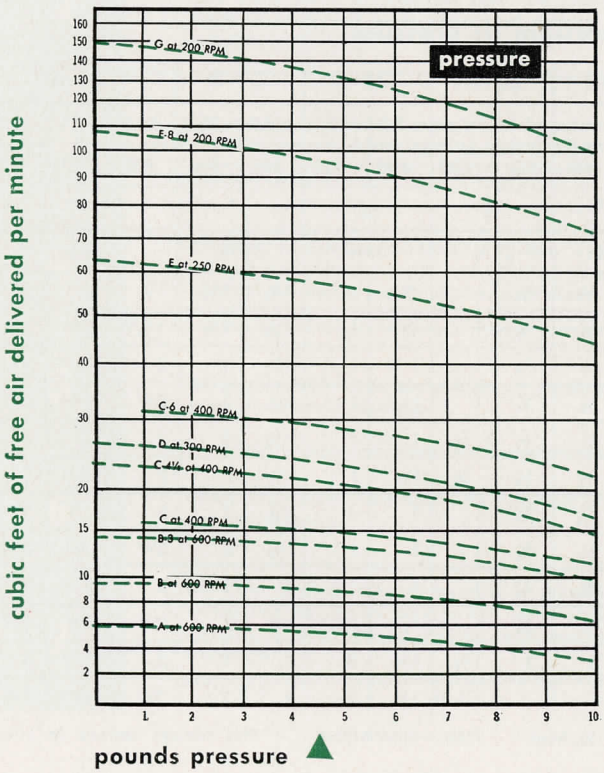
size of pump		A		B		B-3		C		C-4½		C-6		D		E		F-8		G	
cu. ft. per min. displacement		4.8	6	8.5	10	12.7	15	15	18	22	27	30	37	25	35	61	73	105	115	147	162
speed in rev per minute		600	750	600	700	600	700	400	500	400	500	400	500	300	425	250	300	200	220	200	220
pipe size		½"		¾"		¾"		1"		1"		1"		1¼"		1½"		2"		2½"	
weight		16 lb.		27 lb.		31 lb.		45 lb.		56 lb.		60 lb.		79 lb.		119 lb.		288 lb.		303 lb.	
vacuum horse power	at 6"	¼	⅓	⅓	⅓	½	½	½	½	¾	¾	1	1	¾	1	1½	2	3	3	5	5
	at 10"	⅓	½	½	½	¾	¾	¾	¾	1	1	1½	1½	1	1½	2	3	5	5	5W	7½W
	at 15" inter.	½	½	½	½	¾	¾	1	1	1½	1½	2	2	1½	2	3	3	5	7½	7½	7½
	at 15" steady	½	½	½	½	¾	¾	1	1	1½	1½	2	2	1½W	2W	3W	3W	5W	7½W	7½W	7½W
	at 20" inter.	½	½	¾	¾	1	1	1	1½	1½	2	2	3	2	3	5	5	7½	7½	7½	10
	at 20" steady	½	½	¾	¾	1	1	1	1½	1½	2			2W	3W	5W	5W	7½W	7½W	7½W	10W
pressure horse power	at 3 lb.	¼	⅓	⅓	⅓	½	½	½	½	¾	1	1	1	¾	1	1½	2	3	3	5	5
	at 5 lb.	⅓	½	½	½	¾	¾	¾	¾	1	1	1½	1½	1	1½	2	3	5	5	5	7½
	at 10 lb. inter.	½	½	¾	¾	1	1	1	1½	1½	2	2	3	2	3	5	5	7½	7½	7½	10
	at 10 lb. steady	½	½	¾	¾	1	1	1	1½	1½	2	2	3	2	3	5	5	7½W	7½W	7½W	10W
	at 15 lb. steady	½	¾	¾	1	1	1½	1½	2												

W These pumps are water cooled when used for steady service of more than ½ hour. Inter.—Intermittent

for higher vacuum or pressure, see pages 6 and 7

performance curves



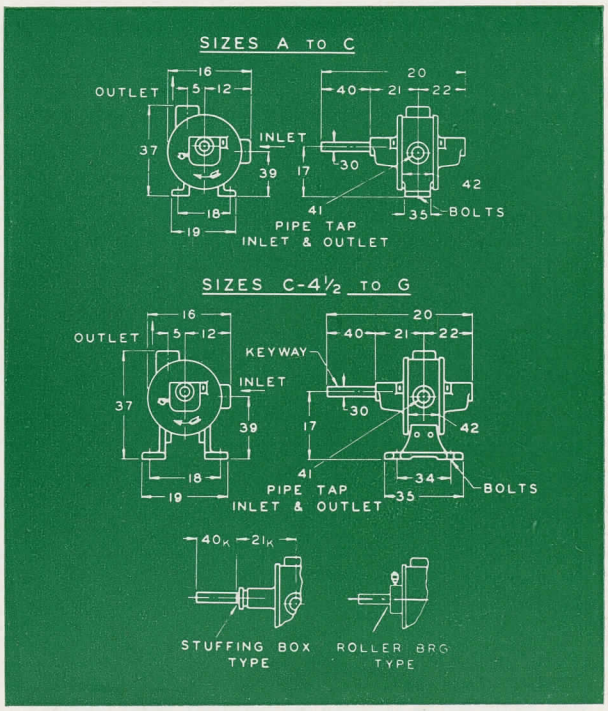


dimensions

pump sizes

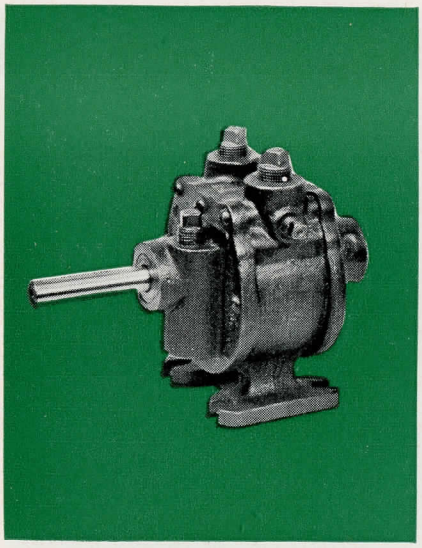
dim. no.	A	B	B-3	C	C-4½	C-6	D	E	F-8	G
5	1 1/8	1 1/4	1 1/4	1 5/8	2 3/16	2 3/16	2 1/2	2 5/8	4	4 1/2
12	3 3/8	3 7/8	3 7/8	4 1/2	4 1/2	4 1/2	6 5/16	7 3/8	9 1/8	10 5/8
16	5 7/8	6 13/16	6 13/16	8 1/8	8 7/8	9	11 1/4	13 3/4	17	19 3/4
17	3 7/16	4	4	4 21/32	5 7/16	6 21/32	7 1/16	8 5/16	9 3/4	11
18	4	5	5	5 1/4	6 13/16	7	7 5/8	10 1/2	14	16 1/8
19	5 1/16	6	6	6 3/8	7 7/8	8 3/4	9 5/16	12 3/8	16 1/4	18 1/4
20	10 7/8	10 3/4	11 3/4	14	13	13 7/16	17	23 7/8	28	33 11/16
21	3 9/16	3 1/2	4	4 1/2	5 1/4	4 31/32	5 3/4	8 11/16	10 1/2	11 9/16
21K	4 13/16	4 13/16	5 3/16	5 7/8			7 1/8	10	11 7/8	12 3/4
22	3 9/16	3 1/2	4	4 1/2	5 1/4	4 31/32	5 3/4	8 11/16	10 1/2	12
30	11/16	11/16	11/16	13/16	1	1	1	1 1/4	1 9/16	1 9/16
34					5 1/4	5 1/4	8	9 1/2	10 1/8	10 15/16
35	1 7/8	1 7/8	2 1/4	2 3/4	6 1/4	7 5/8	10 5/8	12 7/16	13 1/2	14 1/2
37	6 5/32	7 3/32	7 3/32	8 1/2	9 3/8	10 5/8	12	14 1/8	17 1/8	19 9/16
39	3 5/32	3 19/32	3 19/32	4 1/8	7 1/16	8 5/16	6 3/8	7 1/4	8 1/2	9 3/8
40	3 3/4	3 3/4	3 3/4	3 1/4	2 1/2	3 1/4	5 1/2	6 1/2	7	7
40K	2 1/2	2 1/2	2 1/2	3 5/8			4 1/4	5 1/4	5 3/4	7
41	1/2	3/4	3/4	1	1	1	1 1/4	1 1/2	2	2 1/2
42	2	2	3	3	4 1/2	6	4	6	8	8
bolts	3/8	3/8	3/8	1/2	3/8	3/8	7/16	7/16	1/2	1/2
keyway	FLAT	FLAT	FLAT	3/16	1/4	1/4	1/4	1/4	3/8	3/8
type brg.	W or S	W or S	W or S	W or S	W	R	W or S	W or S	W or S	S or O

NOTE W = Wool Packed Bearing
O = Ring Oiler Type
S = Stuffing Box Type
R = Roller Bearing Type

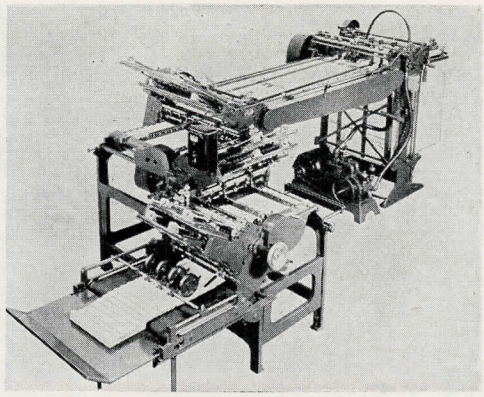


LEIMAN BROS., INC.

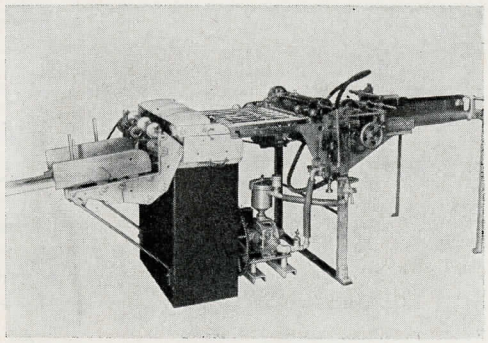
2-wing type



The 2-wing pump is designed for installations requiring a higher degree of vacuum or pressure, but less cubic foot displacement than the 4-wing type. The extra long wings provide more bearing surface when fitted into the long wing slots. They are rigidly constructed and designed for years of wear These long wings seal up the air, preventing its escape through back leakage, insuring positive delivery of air at the outlet regardless of pressure and preventing vibration or variation of air pressure. Where vacuum is used the long seal increases the strength of the vacuum, making a steadier and more positive action.



A Leiman Air Pump is a compact unit requiring only a small amount of space. This pump unit is installed at the base of a paper folding machine and supplies the blowing and suction needed for the feeding operation.



A paper perforator and feeding unit is equipped with a Leiman Air Pump. One pump provides both vacuum and pressure for handling large sheets of paper.

automatic wing adjuster

This curved lever connection is attached to one wing and operates as the piston revolves in the cylinder It adjusts automatically and pushes the wings out in contact with the curved wall of the cylinder In operation the wings adjust themselves by means of centrifugal force combined with the action of this quiet Automatic Wing Adjuster The wings, as they revolve, maintain perfect contact with the inner curved surface of the cylinder The use of this unique, patented adjuster makes it impossible for the wings in this pump to stick or bind.

specifications

2-wing pumps for high vacuum or pressure

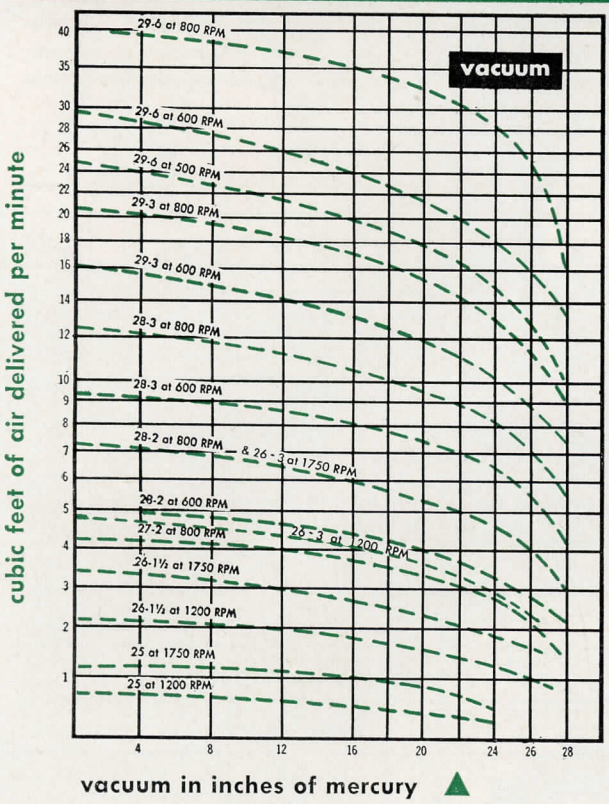
size of pump		25	26-1 ½		26-3		27-2		28-2*		28-3		29-3		29-6		
cu. ft. per min. displacement		1.2	2.4	3.6	4.8	7.2	3	4.4	5.1	7.6	9.3	12.4	15.3	20.4	25.5	30.6	40.8
speed in rev per minute		1750	1200	1750	1200	1750	600	800	600	800	600	800	600	800	500	600	800
pipe size		¼"	⅜"		½"		½"		¾"		¾"		1"		1"		
weight		3 lb.	8 lb.		13 lbs.		17 lb.		28 lb.		38 lb.		51 lb.		68 lb.		
vacuum horse power	at 24" inter.	⅙	¼	⅓	½	¾	⅓	½	¾	1	¾	1	1½	1½	1½	2	3
	at 24" steady		¼		½	¾	⅓	½	¾	1	¾	1	1½	1½	1½W	2W	3W
	at 27" inter.	⅙	¼	½	½	¾	⅓	½	¾	1	1	1	1½	2	2	2	3
	at 27" steady		¼				⅓	½	¾	1	1	1	1½	2	2W	2W	3W
	at 29.9" inter.	⅙	¼	¼	½	¾	⅓	½	½	½	1	1	1½	2	2	2	3
	at 29.9" steady	⅙	¼	¼	½	¾	⅓	½	½	½	1W	1	1½	2	2	2	3
pressure horse power	at 15 lb. inter.	⅙	⅓	½	¾	1	⅓	½	¾	1	1	1	1½	2	2	3	3
	at 15 lb. steady	⅙	⅓	½	¾	1	⅓	½	¾	1	1	1	1½	2	2W	3W	3W
	at 20 lb. inter.	¼	½	½	¾	1	½	¾	¾	1	1	1½	2	2	3	3	5
	at 20 lb. steady						½	¾	¾	1	1	1½W	2W	2	3W	3W	5W
	at 25 lb. inter.	⅓	½	¾	1	1½	¾	1	1	1½	1½	2	2	3	3	5	5
	at 25 lb. steady									1½W	1½	2	2	3	3W	5W	5W

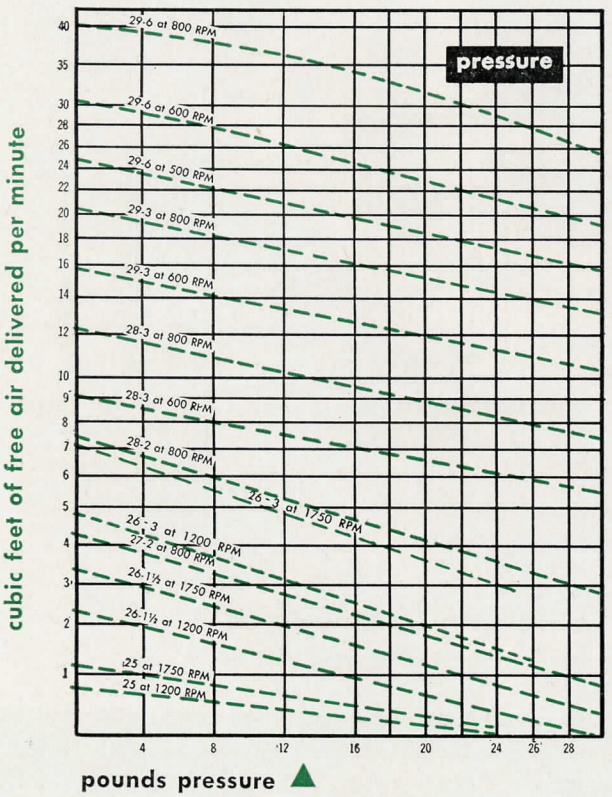
W—These pumps are water cooled when used for steady service of more than ½ hour. Some pumps can be furnished fan cooled for cooler running.

Inter.—Intermittent

* Not always carried in stock.

performance curves

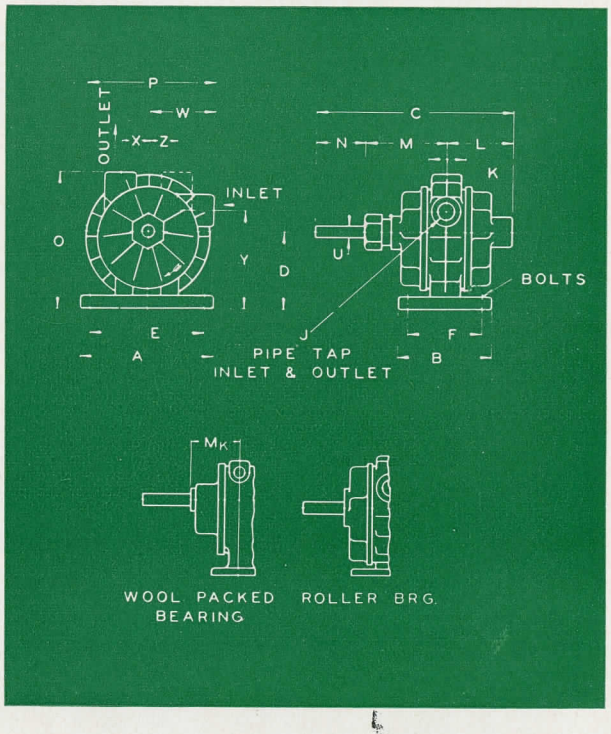




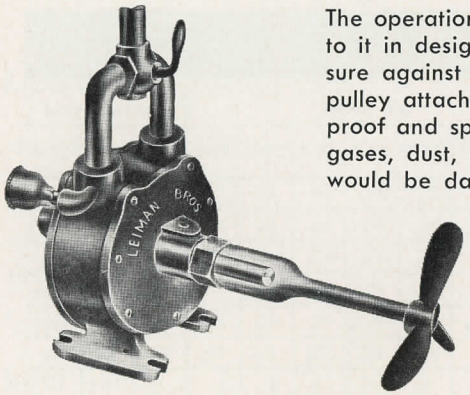
dimensions

dim. letter	* 25	* 26-1½	air cooled 26-3	27-2	28-2	28-3	29-3	29-6	water cooled 28-3	29-3	29-6
A	3	3 1/4	3 1/4	6 3/4	6 3/4	6 3/4	7 7/8	7 7/8	6 3/4	7 7/8	7 7/8
B	15/16	2 3/4	4 3/8	1 3/4	5 3/8	5 3/8	6 1/4	6 1/4	5 3/8	6 1/4	6 1/4
C	6 1/4	6 5/8	8 1/8	8 1/2	11 7/8	12 7/8	11 1/4	14 1/4	12 7/8	11 1/4	14 1/4
D	1 11/16	2 3/4	2 3/4	3 3/16	4 1/4	4 1/4	5 13/32	5 13/32	5 5/32	6 13/32	6 13/32
E	2 1/2	2 3/16	2 3/16	5 5/8	5 11/16	5 3/4	6 7/8	6 7/8	5 3/4	6 7/8	6 7/8
F	ON ℄	2 1/8	3 3/4	ON ℄	4 5/16	4 3/8	5 1/4	5 1/4	4 3/8	5 1/4	5 1/4
J	1/4	3/8	1/2	1/2	3/4	3/4	1	1	3/4	1	1
K	1	1 1/2	3	2	2	3	3	6	3	3	6
L	1 13/16	2 1/4	3	2 7/16	3 5/8	4 1/8	3 7/8	5 3/8	4 1/8	3 7/8	5 3/8
M	2 13/16	2 1/16	4 1/8	3	6 3/8	5 7/8	4	5 1/2	5 7/8	4	5 1/2
N	1 5/8	2 1/8	2 1/8	2 1/2	2 7/8	2 7/8	3 3/8	3 3/8	2 7/8	3 3/8	3 3/8
O	2 15/16	4 13/16	5 1/16	6	7 3/8	7 5/16	9 3/8	9 3/8	8 3/4	10 7/8	10 7/8
P	3	3 5/8	3 5/8	4 9/16	7 1/16	7 1/16	8 15/16	8 15/16	7 3/4	9 1/2	9 1/2
U	3/8	1/2	1/2	5/8	11/16	11/16	1	1	11/16	1	1
W					3 9/16	3 9/16	4 1/2	4 1/2	4 1/8	5	5
X	3/4	15/16	15/16	1 15/32	1 5/8	1 5/8	2 3/16	2 3/16	1 5/8	2 3/16	2 3/16
Y					5 1/2	5 1/2	7 1/16	7 1/16	6 1/4	8 1/16	8 1/16
Z	3/4	15/16	15/16	1 15/32							
M_K	1 13/16	2 1/4	3								
bolts	1/4	1/4	1/4	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
keyway		FLAT	FLAT	FLAT	3/16	3/16	1/4	1/4	3/16	1/4	1/4
type brg.	W or S	W or S	W R	R	S	S	R	R	S	R	R

NOTE W = Wool Packed Bearing
R = Roller Bearing Type
S = Stuffing Box Type
*C'clockwise Rotation



air motors



Leiman air motor

The operation of Leiman Air Motor is the reverse of that of an air pump, although similar to it in design. The compressed air is introduced into the air motor where it acts as pressure against the four straight wings and revolves the piston and shaft so that a gear or pulley attached to the shaft will transmit power to any device to be operated. Spark-proof and splash-proof, a Leiman Air Motor should be used where inflammable vapors, gases, dust, etc., are present and where the use of a gasoline engine or electric motor would be dangerous.

dimensions, inches

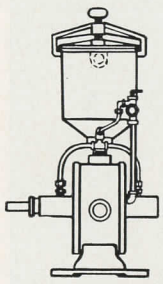
Size of Air motor	24–1 1/2	24–3	A	B	C	D
Shaft diameter	1/2	1/2	11/16	11/16	13/16	1
Cylinder diameter	3 1/2	3 1/2	5 3/4	5 3/4	7	10
Height	5	5	8	9	10 1/2	12 1/4
Overall length (shaft)	8	9	11	11	14	16 1/2
Pipe connection	3/8	1/2	1/2	3/4	1	1 1/4
Weight (lbs.)	8	13	23	27	45	79
			Not reversible			

air motor data

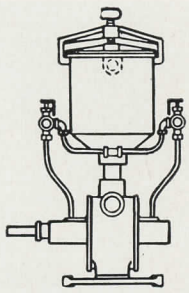
R.P.M.		size of air motor																							
		24-1 1/2				24-3				A				B				C				D			
		Air pressure, lbs.				Air pressure, lbs.				Air pressure, lbs.				Air pressure, lbs.				Air pressure, lbs.				Air pressure, lbs.			
		20	40	60	80	20	40	60	80	20	40	60	80	20	40	60	80	20	40	60	80	20	40	60	80
200	H.P.	.03				.06				12				.30				.75				1.0	2.0		
	C.F.M.	5				10				13				26				52				78	125		
400	H.P.	.06	12			12	.24			16	.35			.50	.90			1.2	1.9	2.5	3.0	1.7	2.7	3.7	4.7
	C.F.M.	6	15			12	30			15	25			30	50			60	100	140	180	90	140	190	240
600	H.P.	.08	18	.29	.37	16	.36	.58	.74	.22	.42	.62	.82	.70	1.2	1.6	2.0	1.4	2.1	2.8	3.5	2.2	3.2	4.2	5.2
	C.F.M.	10	17	25	32	20	34	50	64	17	28	40	52	34	56	73	90	68	112	160	208	102	155	215	270
800	H.P.	11	.23	.36	.47	.22	.46	.72	.94	.27	.52	.74	1.0	.98	1.6	2.2	2.8	1.7	2.5	3.5	4.5				
	C.F.M.	11	18	26	33	22	36	52	66	19	31	45	52	38	62	81	100	76	124	180	236				
1800	H.P.	.15	.41	.68	.94	.30	.82	1.36																	
	C.F.M.	12	21	27	35	24	42	54																	

C.F.M. is cubic feet of free air per minute consumed by air motor.

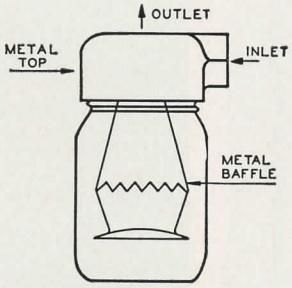
accessories



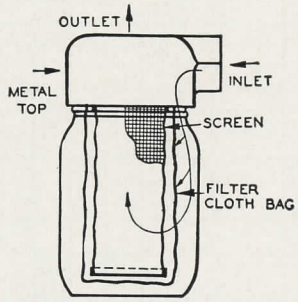
OILING SYSTEM— Feeds oil to interior and bearings. It is designed for 4-wing type pumps which operate at 11 to 20 inches of vacuum.



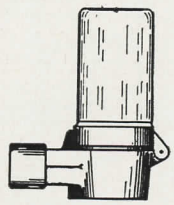
OILING SYSTEM— Feeding oil to bearings and then to pump interior, this system is suitable for 2-wing type pumps which are rated for 21 to 29 inches of vacuum. Has adjusting valve on each bearing line.



INLET DUST SEPARATOR — Cleans the air before entering the pump. The dust laden air enters the inlet (which is on a tangent) and whirls around in the glass jar with a cyclonic action. Most of the dust is thrown to the bottom of the jar while the rest of the dust is deposited on the outside of the removable filter cloth bag as the air filters through it. This prevents wear and damage to the precision parts of the pump.



OUTLET SEPARATOR—Separates oil from the air as it passes through. Oil collects in bottom of clear glass jar where it can be seen.



AUTOMATIC OILER (E113) Feeds oil from SAE 20 to 50 only when the pump runs. Can be adjusted 1 drop in 5 minutes to 2 drops in 1 minute. No moving parts. Requires no manual adjustment.

Write for our free application folder containing 60 how-to-do-it blueprints of actual operations—it will suggest many more.

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